DOCUMENT RESUME

ED 121 028 95 EC 082 605

AUTHOR	Bessent, E. Wailand; And Others
TITLE	Student Manual for Instructional Decision-Making Module; Volume 1: A Computer Assisted Instruction Module. Document Number 3.
INSTITUTION	Texas Education Agency, Austin.; Texas Univ., Austin. Coll. of Education.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE	Apr 74
NOTE	14p.; For related documents, see EC 082 599 - EC 082 607 , EA 008 159, and EA 008 161 - EA 008 166
EDRS PRICE	MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS	Administration; *Computer Assisted Instruction; *Decision Making; Exceptional Child Education; *General Education; *Handicapped Children; Higher Education; Models; *Supervisory Training
IDENTIFIERS	*Special Education Supervisor Training Project

ABSTRACT

Rational decision-making and the use of a computer assisted instruction (CAI) module for improving decisions are examined in the manual for graduate students in instructional leadership training programs. Eleven steps involved in using the CAI module are outlined, and procedures for using the terminal and evaluating decisions are analyzed. It is explained that the student manual is designed to be used with the problem manual (EC 082 606). (CL)

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Document #3

STUDENT MANUAL FOR INSTRUCTIONAL DECISION-MAKING MODULE©

Volume 1

A Computer Assisted Instruction Module

Prepared By
E. Wailand Bessent
with the assistance of
Authella Bessent, Howard Sanford, and Robert Price

for

Special Education Supervisor
Training Project
The University of Texas at Austin
1974

EC082605

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Funded by BEH/USOE (IAC) 72 73 1257 to the Texas Education Agency and College of Education, The University of Texas at Austin.

Preface

This **student manual** is designed to familiarize graduate students in instructional leadership training programs with rational decision-making and the use of a Computer Assisted Instruction module for improving ones own decisions. Professor Bessent has pioneered in efforts to apply CAI to professional level leadership training. One of his main interests has been improving the decision-making of instructional leaders in school settings.

The Special Education Supervisor Training Project commissioned the work reflected in this volume and a companion volume -- Problem Manual for Instructional Module in Decision-Making. This Project, in designing a competency-guided program for the preparation of professional supervisors of special education, emphasized from its very beginning in early 1972 the concept of a supervisor of instruction as change agent. An array of "problem solving competencies" were delineated along with "human relations" and "job task" competencies. It soon became clear, that decision-making skill was essential to every facet of leadership behavior and the refinement and testing of this decision-making module utilizing CAI technology was given priority.

This manual and the problem manual have been utilized with the 1973-1974 team of SEST project trainees. This preliminary experiences with the module has led to the complete revision of the manuals as well as to substantial revisions in the computer program and related materials.

Ben M. Harris
Co-Director
Special Education Supervisor
Training Project
April 5, 1974

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INTRODUCTION

One of the unavoidable facts of life for the supervisor or administrator is that he or she is always making decisions. As a student, you spend a lot of time learning things that are intended to help you know what decisions a professional would make in certain circumstances, but you probably get little help in understanding the process you use in deciding what to do. This module is designed to help you with this understanding. There is no guarantee that you will make better decisions, but you will learn one approach to decision-making that you will be able to use when you want to.

The process is quite simply stated:

If you have to choose between two alternatives in a problem situation, you will first consider under what set of circumstances you would choose each one and then you will seek information about which set of circumstances exist. Depending on what you find out in your information search, you can then choose the appropriate alternative. The reason for deciding what circumstances lead to each alternative is that this helps you determine what information is needed so that you can search for facts efficiently and purposefully. This may be sufficiently clear to you, but in the event that it is not, let's take one example from the case file of that well-known educational problem solver, Super Visor.

The Case of the Interest Killer

> When Super Visor arrived at the classroom, the scene of the crime, interest was dead. Instantly, his lightening-quick mind zapped out the problem: "Who killed interest?"
>
> Scribbling rapidly in his notebook, he outlined two alternatives
>
> A1 - The teacher did it
> A2 - The subject-matter did it

(He cleverly avoided work by holding in reserve a third alternative - that they both did it - knowing that if he found that A1 and A2 were both true, he could determine the third alternative).

Shifting now to his vast memory powers from similar cases and from what he had learned from his old professor, Super Visor quickly determined the premises or circumstances under which he would conclude each alternative:

Premise #1 - The teacher did it if I find that interest is still alive in other classrooms of the same subject.

Premise #2 - The subject-matter did it if interest is still alive when the teacher teaches other subjects.

Now he brings his penetrating observation powers to bear on searching for clues that would provide information on tracking down the killer:

Information item 1: How are pupils acting in other classrooms?
Information item 2: How do pupils act when this teacher teaches other subjects?

We will leave Super Visor now that he has completed his analysis, because his approach is so simple-minded that the outcome couldn't possibly interest you -- a Graduate Student. Instead, you will be given a chance to solve some problems of your own.

The problems are in the booklet entitled PROBLEM MANUAL, but before you turn to it, there are some details that you will need to know so please keep reading.

1. You will be using a computer to give you the information you need and to evaluate your work (don't panic, it will look like an electric typewriter with a TV set attached). The second part of this booklet gives you instructions for using it.
2. You may want to know what you are expected to learn from all this. That is coming up next.
3. You may want to know how you will find out if you have learned anything. That is in part 3.

What Are You Expected To Learn From All This?

In general, the instruction in decision-making should help you with the competencies specified in the problem-solving processes. It will be most helpful in:

Process 1. Assessing: "... securing data for determining needs for change ..."

Process 4. Evaluating:"... formulating questions, securing data, interpreting data, and relating outcomes to objectives."

Specifically, you may expect to improve:

1. Efficiency of information use -- given a decision situation, you will be able to choose information which will contribute the most to reducing your uncertainty.
2. Consistency of decision process -- given your own decision rules, you will be able to make choices that are logically consistent.
3. Decreasing risk -- given a decision situation, you will be able to choose an alternative that will minimize the risk of a bad choice.

You may want to postpone careful reading of the following section until you are ready to begin a problem. In any event, take a look at the Problem Manual before going on.

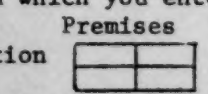
USING THE COMPUTER-ASSISTED INSTRUCTION (CAI) MODULE

General Information

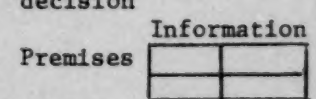
Since the instruction for this module is guided by a computer, you will have to learn how to get the computer to do what you want. This is not as complex as it may seem. By using this booklet and getting a little help from your instructor, you should manage it with only one practice session of about one hour.

The computer is operated by a program which takes you through the following steps:

1. You select a problem (one of problem forms in Part III).
2. You analyze the problem by filling out the parts required in the work sheet for the problem (before going to the terminal). These forms are in the pink section of the Problem Manual.
3. You "sign on" the terminal for the problem selected.
4. The computer displays an ACTION and PREMISE matrix on which you enter your numerical values (from step 2 above).



5. The computer displays a PREMISE and INFORMATION matrix on which you enter your values (from step 4) (steps 4 and 5 set up your "decision rules." You are now ready to ask for information).



6. The computer now requests that you ask for information or choose an action.
7. If you ask for information, it will display the item you request. You will continue until you have all the information you need.
8. For each information item, you must indicate how much help it gives you in deciding.
9. When you choose an action, the computer evaluates all your work and tells you if you:

a) decided correctly (according to your own values)
b) decided prematurely (not enough information)
c) decided inconsistently (with your own values)

10. You get a summary of your work.

11. You can now repeat the problem or begin a new one.

Note:
* There are no right or wrong decisions predetermined - each decision is evaluated in terms of your own reasoning.

* You work at your own pace while at the terminal and you decide whether to repeat a problem.

Instructions for Using the Terminal

The following steps will get you to the computer terminal and will lead you through the steps involved in making a decision. Don't be alarmed if the directions don't make much sense at this point. When you are there with a terminal in your own hands, you will see what this is all about. The directions are included here so you can have a preview and also a manual to use when you get there. Be sure to take this along with you to use with the Problem Manual. The same steps are provided in the other manual, but not as detailed as here. You will probably want to use both as you learn -- this for the instructions on using the terminal; the other manual for the specific problems.

1. Read this manual and fill out the worksheet for the problems you plan to use before going to the CAI lab.
2. Call to arrange a time at the CAI lab and go to the CAI lab. Take this manual with you.
3. Tell the proctor you wish to use the in-basket practice problem (also called DECIDE). He will assign you to a terminal and load a film reel labeled IN-BASKET.
4. Turn on red switch in back of terminal (right side).
5. The typewriter keys we will be using for this program have the characters written with stick-on labels on the front side of the keys. (upper and lower cases) Ignore characters on top of keys. Remember 0 (zero) is not O (the

letter) and 1 (one) is not 1 (lower case L). Call the proctor if you need assistance.

6. Press the alternate code key (alt) and the index keys simultaneously. Wait for a small rectangle to appear on the video screen.
7. Type your individual student number while holding down the shift key at the same time. Press the return key.
8. Type:) LOAD 406 for the practice problem (or appropriate problem number from your workbook. See top of each problem worksheet for the number). Press return key.
9. Type: G. Press return key (the underline means the Alt. key undepressed along with G)
10. Input Step 1: You will now be presented with a matrix like the one in your workbook. Use the light pen to assign numerical values to each premise. When the "P" appears in the lower right corner of the screen, press the light pen tip on the box in the matrix to be assigned a value and then to a number shown below the matrix. You may change a value in the same manner. When finished assigning values to premises, press the light pen to the "matrix completed" box at the lower left of the screen.
11. A display will now appear which shows the numbers above expressed as proportions. Study this or make notes if you desire. For example, .5 means that one-half of the information needed to confirm the action is provided by the premise.
12. Input Step 2: Use the light pen to indicate the relationship of each premise to each information item, in a manner similar to input step 1.
13. Input Step 3: You may request any item of information listed by typing its code number prefixed by I, followed by pressing the return key. For example, I 7 will call up item 7. The image projector display screen will present you with the information you have requested. Study this as long as you desire

and, press the return key when ready to proceed.

14. Input Step 4: Type the same number as you did in Step 3 without the I prefix. Press the space bar. This indicates that the source of the information is the same as the information item number.

15. Input Step 5: Indicate your assessment of the value of the information you received in Step 3 on a scale of 0 to 10. If the information supports the premise, use positive numbers; otherwise, use negative ones. Press space bar.

16. You will be returned now to "Input Step 3." In addition to requesting new information, you may review information by prefixing the code number with a R instead of an I, or you may change a previously assigned value by prefixing a code with C. You will continue this cycle through Step 3, 4, and 5 until you are ready to make a decision.

17. When you are ready to make a decision, select one of the action alternatives presented on input Step 3 by typing A and the code number of the action you have chosen. Press the space bar.

18. The computer will now tell you to call the proctor. Before you do this, type S and press the space bar. Copy down the numbers shown. Press the space bar again. Type U and observe a summary of your work. Copy the summary for discussion with the instructor.

19. Call the proctor to sign you off. Tell him to save your work.

Follow the same procedure for each problem.

PART III - HOW TO EVALUATE YOUR WORK

Your decision making process is evaluated on the basis of these three criteria:

1. Whether the action you take is consistent with the information you have.
2. Whether you have enough information to make the choice.
3. Whether the information you have requested yielded the most help in making your decision.

The summary of your work which you requested in step 18 above can be interpreted against these criteria. Remember that there are no right or wrong answe These are, however, some ways in which you can judge your skill and progress in making decisions. The computer will give you a correct, inconsistent, or insuffficient information report after you make your decision. This does not indicate a correct in the absolute sense, but whether the decision is supported by the values which you assigned to the various premises and whether the premis were supported by the information as you evaluated it.

The data on the summary screen will look similar to this:

```
005          John Doe                    12/18/73                    14:53:28

                                  APL    1500

) LOAD

SAVED   12/18/73                    14:25:07
  S
  0     2     1
  0     3     4
  0     6     3
  1     2     1
  2     5     2
  0     4     2
  1     6     1
  0     1     1
  5     1     0

  D

  0.82897              0.507272                         0.265385

  C

  0.553705             0.758316
```

This may be interpreted in the following manner. The heading information includes name, date, program and problem number, and the length of time you worked on the problem. The first group of three columns of numbers is a summary of your work. The first column codes are:

0 - normal request
1 - review information
2 - changed value
3 - correction
4 - premature
5 - inconsistent

The second column indicates the number of the information item requested. The third column indicates the relative priority of the item of information which you requested. The lower these priority numbers, the better you are at selecting valuable information. All 1's in this column is a perfect score. The last entry in the list always refers to the alternative you selected. In our example, alternative 1 was selected and a 5 in the first column indicates that this was an inconsistent decision (the zero is simply a place-holder):

The numbers under the capital D refer to the degree to which the premises were supported by the information you received. There will be a number here for each premise in the problem. In our sample, the number 0.82897 indicates premise one was approximately 83% determined, premise two was 50% determined, and premise three was 26% determined.

The numbers under the capital C refers to the probability of success of each alternative. The entry 0.553705 means alternative 1 was still only little better than 50 per chance of success. The second number (0.758361) means that alternative two has about a 76% probability of success.

As you progress you should look for the priority of information items requested to become higher. You should also expect fewer incorrect and inconsistent decisions. The degree of support for premises should increase as reflected in larger numbers, and you should find yourself selecting the alternative with a higher probability of success. You will also find that you can reach decisions

faster and operation of the computer will become easier.

PROGRESSIVE IMPROVEMENT IS THE MOST IMPORTANT THING. A DECISION PROCESS IS BEING TAUGHT HERE, AND THIS IS THE THING ON WHICH YOU SHOULD EVALUATE YOURSELF RATHER THAN THE "CORRECT" FINAL CHOICE. ALTERNATIVE ONE MAY BE "CORRECT" FOR A COLLEAGUE WHILE ALTERNATIVE TWO WAS "CORRECT" FOR YOU.

A paper copy of the summaries of each problem may be obtained by requesting the proctor to retrieve it for you. This should aid you in evaluating your progress.

Have fun and good luck!